



SEQUENCE LISTING

(1) GENERAL INFORMATION:

- (i) APPLICANT: Levy, Gary
Clark, David A.
- (ii) TITLE OF INVENTION: Methods of Modulating Immune Coagulation
- (iii) NUMBER OF SEQUENCES: 4
- (iv) CORRESPONDENCE ADDRESS:
(A) ADDRESSEE: BERESKIN & PARR
(B) STREET: 40 King Street West
(C) CITY: Toronto
(D) STATE: Ontario
(E) COUNTRY: Canada
(F) ZIP: M5H 3Y3
- (v) COMPUTER READABLE FORM:
(A) MEDIUM TYPE: Floppy disk
(B) COMPUTER: IBM PC compatible
(C) OPERATING SYSTEM: PC-DOS/MS-DOS
(D) SOFTWARE: PatentIn Release #1.0, Version #1.30
- (vi) CURRENT APPLICATION DATA:
(A) APPLICATION NUMBER: 09/442,143
(B) FILING DATE: 15-NOV-1999
(C) CLASSIFICATION:
- (viii) ATTORNEY/AGENT INFORMATION:
(A) NAME: Gravelle, Micheline
(B) REGISTRATION NUMBER: 40,261
(C) REFERENCE/DOCKET NUMBER: 9579-014
- (ix) TELECOMMUNICATION INFORMATION:
(A) TELEPHONE: (416) 364-7811
(B) TELEFAX: (416) 361-1398

(2) INFORMATION FOR SEQ ID NO:1:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 4630 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: other nucleic acid
- (vi) ORIGINAL SOURCE:
(A) ORGANISM: Homo sapiens
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

GATCTAGGGT TGGAAGCCAG GTCTCCTGAG TATGCGAGAA TAAATACAGT CATGGAAGTG	60
TAAAGAGTCT GCCAACATTT TGAGAAATGTG AATAGGATTT GGCTAAAATT AAGGGGATAT	120
ACAGAAAAGT CATAGGAAAT CAGGTTAAAG ACATAAATAT GAGATAGGCT ACAGAGTGTT	180
TTAAGTAATA CAATAAAACA TTTAGATTTT TGCCCATGTC AGTCATTTTG AAATTATTTT	240
TAAAGCAAAA AAACCCTTTT TAAACAAGAA ATCTTATGAG ATGTCAATAT GCAAAACAAA	300
TTAAAAGGAG GTGGTTTCTC TAACTGAAGC TGTTCTCTCT TCCTGCCTTC AGCCTCTGAA	360

GAGAAAGTTA GAAAACTATT ATCATTAAATG CTACATGTTT TGAACAAGCT GATATACCAA 420
GTGGCCCAGA GAGCAGGTAG AAGAACCAGC GTGGAGACAG AAAGCAAGAG GCCCGCCTGC 480
CAGGGCTACC TGCAGAAAGA AAGGGCAAG ATGCTGTAGG CAAGAGAAAGT TCAGGACAGA 540
CACTGGCATA GCTCAAAGAT TCACATTGGA GCAGCTGTGG AAGATGACAG TACAATTACC 600
AAAATGTCGA AGGGCAAAGG AGGCAGCTAC TGGTTTTGAT GAAAGACAAT TATGTCCTTT 660
TAAATGGGTC TTAGACATTT AGACATTTAT ATACACTATG CTACGGACAA AGGAATAGAA 720
AGTAGCACTT TTTTCTCCAC TAGTTTTCTT CTCTTTTTCA AGTAGATGAA GCAAAAGTCA 780
ACTGCAATAG TCAGAAAGCT GTACTTTGTT ACACTTAGAA ACTTCTAAAA GTGCTTAAGA 840
TTTCACCTGA AAGTCCAACA TGAAGAAAAT ACAGGCTCCC CAATGCCCCA TTCTAAGAAG 900
GAAAAAGGAC CATTTTCATT TTAGTAACGT TTCTGTTCTA TAGACAGTTT GGATAACTAG 960
CTCTTACTTT TTATCTTTAA AAACGTGTTT TCCAGTGAAG TTACGTATAA TTATTTACTT 1020
CAAGCGTAGT ATACCAAATT ACTTTAGAAA TGCAAGACTT TTCTTATACT TCATAAAATA 1080
CATTATGAAA GTGAATCTTG TTGGCTGTGT ACATTTGACT ATAATAATTT CAATGCATAT 1140
TATTTCTATT GAGAGTAAGT TACAGTTTTT GBCAACTGC GTTTGATGAG GGCTATCTCC 1200
TCTTCCTGTG CGTTTCTAAA ACTTGTGATG CAAACGCTCC CACCCTTTCC TGGAACACA 1260
GAAAGCCTGA CTCAGGCCAT GGCCGCTATT AAAGCAGCTC CAGCCCTGCG CACTCCCTGC 1320
TGGGGTGAGC AGCACTGTAA AGATGAAGCT GGCTAACTGG TACTGGCTGA GCTCAGCTGT 1380
TCTTGCCACT TACGGTTTTT TGGTTGTGGC AAACAATGAA ACAGAGGAAA TTAAAGATGA 1440
AAGAGCAAAG GATGTCTGCC CAGTGAGACT AGAAGCAGA GGGAAATGCG AAGAGGCAGG 1500
GGAGTGCCCC TACCAGGTAA GCCTGCCCCC CTTGACTATT CAGCTCCCGA AGCAATTCAG 1560
CAGGATCGAG GAGGTGTTCA AAGAAGTCCA AAACCTCAAG GAAATCGTAA ATAGTCTAAA 1620
GAAATCTTGC CAAGACTGCA AGCTGCAGGC TGATGACAAC GGAGACCCAG GCAGAAACGG 1680
ACTGTTGTTA CCCAGTACAG GAGCCCCGGG AGAGCTTGGT GATAACAGAG TTAGAGAATT 1740
AGAGAGTGAG GTTAACAAGC TGTCTCTGA GCTAAAGAAT GCCAAAGAGG AGATCAATGT 1800
ACTTCATGGT CGCCTGGAGA AGCTGAATCT TGTAATATG AACAACATAG AAAATTATGT 1860
TGACAGCAAA GTGGCAAATC TAACATTTGT TGTCAATAGT TTGGATGGCA AATGTTCAAA 1920
GTGTCCCAGC CAAGAACAAA TACAGTCACG TCCAGGTATG TATAATAATG TTTTCTTATC 1980
ATATGTTTAT AAATGTTATA CAGTCAGAGA TGTATCTAAA AGATTAACCT GAGTCAGTAA 2040
GTTAAATAGA TGACAGATTA AGTCTTTTAT TTATCAAGGT GCACAGGAAA AAATAAATAT 2100
CTTCTCAAAT ATGACCACAT AAATATGACC TAATTACAAA ATCATAGTTA GTTCTGTATC 2160
CACTGGAAGT CACTTTCAAT TTTAAGATCT TATTTGTTAA TGCCAGACCT ACTTGCAAGC 2220
AGAGATTAGA GGTCTTTTCT GCTTTATAAC ATTAGTTCT TCTTGTGAGG CCTTAAGCAT 2280
TACTAAACA CCTTCAAGTA AGTTTAGTAA AGTTTCATTA CTGCCATTGA TTCAATTATC 2340

AAACTGCTTT TGTACATATA AAGAATTCTT CAGATGCATG GTTCTATTA ACAAGATCCA 2400
ATGCCTTCCT TTTATTTCCC CTTCAGTTCA ACATCTAATA TATAAAGATT GCTCTGACTA 2460
CTACGCAATA GGCAAAAGAA GCAGTGAGAC CTACAGAGTT ACACCTGATC CCAAAAATAG 2520
TAGCTTTGAA GTTTACTGTG ACATGGAGAC CATGGGGGGA GGCTGGACAG TGCTGCAGGC 2580
ACGTCTCGAT GGGAGCACCA ACTTCACCAG AACATGGCAA GACTACAAAG CAGGCTTTGG 2640
AAACCTCAGA AGGGAATTTT GGCTGGGGAA CGATAAAATT CATCTTCTGA CCAAGAGTAA 2700
GGAAATGATT CTGAGAATAG ATCTTGAAGA CTTTAATGGT GTCGAACTAT ATGCCTTGTA 2760
TGATCAGTTT TATGTGGCTA ATGAGTTTCT CAAATATCGT TTACACGTTG GTAACTATAA 2820
TGGCACAGCT GGAGATGCAT TACGTTTCAA CAAACATTAC AACCACGATC TGAAGTTTTT 2880
CACCCTCCA GATAAAGACA ATGATCGATA TCCTTCTGGG AACTGTGGGC TGTACTACAG 2940
TTCAGGCTGG TGGTTTGATG CATGCTTTTC TCCAAACCTA AATGGCAAAT ATTATCACCA 3000
AAAATACAGA GGTGTCCGTA ATGGGATTTT CTGGGTACC TGGCCTGGTG TAAGTGAGGC 3060
ACACCCTGGT GGCTACAAGT CCTCCTTCAA AGAGGCTAAG ATGATGATCA GACCCAAGCA 3120
CTTTAAGCCA TAAATCACTC TGTTCAATCC TCCAGGTATT CGTTATCTAA TAGGGCAATT 3180
AATTCCTTGT TTCATATTTT TCATAGCTAA AAAATGATGT CTGACGGCTA GGTTCTTATG 3240
CTACACAGCA TTTGAAATAA AGCTGAAAAA CAATGCATTT TAAAGGAGTC CTTTGTGTGT 3300
ATGCTGTTAT CCAATGAACA CTTGCAAGCA ATTAGCAATA TTGAGAATTA TACATTAGAT 3360
TTACAATTCT TTTAATTTCT ATTGAACTT TTTCTATTGC TTGTATTACT TGCTGTATTT 3420
AAAAATAAAT TGTTGGCTGG GTGTGGTAGC TCACGCCTGT AATCCAGCA CTTTGGAAATG 3480
TCAAGGCAGG CAGATCACTT GAGGTCAGGA GTTTGAGACC AGCCTGGCCA AACATGTGAA 3540
ACGCTGTCTC TATTAATAAAT AAAAAATTA GCCGGGCATG GTGGTACATG CCTGTAATCA 3600
ACGCTGTTTA TTAAAAATAC AAAAATTAGC CGGGCATGGT GGACATGCCT GTAATCCTAG 3660
TACTTGGGAG GCTGAGGCAG GAGAATCGCT TGAACCTGAG AGGAAGAGGT TGCAGTGAGC 3720
CAAGAATGAG CCACTGCACT CCAGCATGGG TGACAGAGAA AACTCTGTCT CAAACAAAAA 3780
AATAATAAAA TTTATTCAGT AGGTGGATTC TACACAAAGT AATCTGTATT TGGGCCATGA 3840
TTTAAGCACA TCTGAAGGTA TATCACTCTT TTCAGGCTAT AATTATTTGG GTAATCTTCA 3900
TTCTGAGACA AACTTAATCT ATATCATTTA CTTTGCAACA GAACAACCTT ACAGCATTTT 3960
GGTTCCTCAGA CTAAGGGAAC TAATATCTAT ATAATTAAAC TTGTTCATTT ATCATTCATG 4020
AAATATAAAA TACTTGTCAT TTAAACCGTT TAAAAATGTG GTAGCATAAT GTCACCCCAA 4080
AAAGCATTC AAGGCAATG TAACTGTGAA GACCAGGGTT TAAAGGTAAT TCATTTATAG 4140
TTTATAACTC CTTAGATGTT TGATGTTGAA AACTGCTTTA ACATGAAAT TATCTTCCTC 4200
TGCTCTGTGT GAACAATAGC TTTTAATTTA AGATTGCTCA CTACTGTACT AGACTACTGG 4260
TAGGTTTTTT TGGGGGGGGG TGGGTAGGGA TATGTGGGTA ATGAAGCATT TACTTACAGG 4320

CTATCATACT CTGAGGCCAA TTTTATCTCC AAAGCAATAA TATCATTAAG TGATTCACTT 4380
CATAGAAGGC TAAGTTTCTC TAGGACAGAT AGAAAACATG AATTTTGAAA TATATAGAAC 4440
AGTAGTTAAA ATACTATATA TTTCAACCTT GGCTGGTAGA TTGCTTATTT TACTATCAGA 4500
AACTAAAAGA TAGATTTTAA CCCAAACAGA AGTATCTGTA ATTTTATATA TTCATCAATT 4560
CTGGAATGCT ATATATAATA TTTAAAAGAC TTTTAAATG TGTTTAATTT CATCATCGTA 4620
AAAAGGGATC 4630

(2) INFORMATION FOR SEQ ID NO:2:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 439 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

Met Lys Leu Ala Asn Trp Tyr Trp Leu Ser Ser Ala Val Leu Ala Thr
1 5 10 15
Tyr Gly Phe Leu Val Val Ala Asn Asn Glu Thr Glu Glu Ile Lys Asp
20 25 30
Glu Arg Ala Lys Asp Val Cys Pro Val Arg Leu Glu Ser Arg Gly Lys
35 40 45
Cys Glu Glu Ala Gly Glu Cys Pro Tyr Gln Val Ser Leu Pro Pro Leu
50 55 60
Thr Ile Gln Leu Pro Lys Gln Phe Ser Arg Ile Glu Glu Val Phe Lys
65 70 75 80
Glu Val Gln Asn Leu Lys Glu Ile Val Asn Ser Leu Lys Lys Ser Cys
85 90 95
Gln Asp Cys Lys Leu Gln Ala Asp Asp Asn Gly Asp Pro Gly Arg Asn
100 105 110
Gly Leu Leu Leu Pro Ser Thr Gly Ala Pro Gly Glu Val Gly Asp Asn
115 120 125
Arg Val Arg Glu Leu Glu Ser Glu Val Asn Lys Leu Ser Ser Glu Leu
130 135 140
Lys Asn Ala Lys Glu Glu Ile Asn Val Leu His Gly Arg Leu Glu Lys
145 150 155 160
Leu Asn Leu Val Asn Met Asn Asn Ile Glu Asn Tyr Val Asp Ser Lys
165 170 175
Val Ala Asn Leu Thr Phe Val Val Asn Ser Leu Asp Gly Lys Cys Ser
180 185 190
Lys Cys Pro Ser Gln Glu Gln Ile Gln Ser Arg Pro Val Gln His Leu
195 200 205
Ile Tyr Lys Asp Cys Ser Asp Tyr Tyr Ala Ile Gly Lys Arg Ser Ser
210 215 220

Glu Thr Tyr Arg Val Thr Pro Asp Pro Lys Asn Ser Ser Phe Glu Val
225 230 235 240

Tyr Cys Asp Met Glu Thr Met Gly Gly Gly Trp Thr Val Leu Gln Ala
245 250 255

Arg Leu Asp Gly Ser Thr Asn Phe Thr Arg Thr Trp Gln Asp Tyr Lys
260 265 270

Ala Gly Phe Gly Asn Leu Arg Arg Glu Phe Trp Leu Gly Asn Asp Lys
275 280 285

Ile His Leu Leu Thr Lys Ser Lys Glu Met Ile Leu Arg Ile Asp Leu
290 295 300

Glu Asp Phe Asn Gly Val Glu Leu Tyr Ala Leu Tyr Asp Gln Phe Tyr
305 310 315 320

Val Ala Asn Glu Phe Leu Lys Tyr Arg Leu His Val Gly Asn Tyr Asn
325 330 335

Gly Thr Ala Gly Asp Ala Leu Arg Phe Asn Lys His Tyr Asn His Asp
340 345 350

Leu Lys Phe Phe Thr Thr Pro Asp Lys Asp Asn Asp Arg Tyr Pro Ser
355 360 365

Gly Asn Cys Gly Leu Tyr Tyr Ser Ser Gly Trp Trp Phe Asp Ala Cys
370 375 380

Leu Ser Ala Asn Leu Asn Gly Lys Tyr Tyr His Gln Lys Tyr Arg Gly
385 390 395 400

Val Arg Asn Gly Ile Phe Trp Gly Thr Trp Pro Gly Val Ser Glu Ala
405 410 415

His Pro Gly Gly Tyr Lys Ser Ser Phe Lys Glu Ala Lys Met Met Ile
420 425 430

Arg Pro Lys His Phe Lys Pro
435

(2) INFORMATION FOR SEQ ID NO:3:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 5403 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: other nucleic acid

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

CATAAGGCGT GTCTGACAAA TTCTTCATAC ACACATTTCC CCTTTGCACA TTCAGTCTGT	60
ATAGGTTATT TCTATAGGAG AAAAAAATA TTCAAATTCC TTGTGCACTG GTAACAGGCA	120
TGAAGGCTCA GCAAAGCCAA TACGTGTTAT GTCCAGTTGG AGACAGTGCC AGGGCCAACA	180
TTCCAGACTT CTCAGATAGA AAGTGCGCCT GCCTGCCCTG CTCTGAGAAT TTGAAGAGAG	240
TAGTTCAGTT AGAATTAAGA GGCAGTAGAG AAAAGTCTTG GGAAATCTGG TTAGAGATAT	300
AAATATGAGA ACTGGACATG GTGGTACACA CCTGTGATCT CTGTGTTTAG GAGGGAGAGG	360

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CAGAGAGATC	AGGAGTTCAA	GGCCAGCCTG	AGCTACTTGA	GACCCAGTCT	AAATAAATAA	420
GAGATAGATT	ACAGAGTGCC	TTTAACTAGT	ACAGAGAAAG	AATTTGGGTT	TATCTGTGTC	480
AGTTACGCTG	AAATAATTTT	TAAGTAATAA	AATCCCTTTT	AATAAGAAAC	CTTATGAGGT	540
CAGTATGCAC	AATGAACTTA	AGAGAGACCC	CCAGCTCCTG	AGCTGAGTGA	TGGGGAAGGA	600
CAGCCACTGC	CTGTGATGTG	TGAGTGACGT	GCTTCCAAGT	GTTTTAACCA	CTGACGATTA	660
CATAGCCTGC	ACAGTCAGGA	GAAAACAGCC	GTATTCTCTG	CCAGTTCTCT	TCCCTTTTAC	720
AAACAGATGA	GAGACACACA	CAGAGAATCC	ATTTAAAGAG	CGGACCTTTG	TTCTGATTAG	780
GGGCAATTTT	AAGTACTTAA	GAGTTCACAC	AAAGTCTAGC	CTTCAAAAAG	AAAACAGGTT	840
CCCAAACCTAG	GGAGGAAACA	GAATCATTTC	CATTTTGGTG	ACATTTAGTG	GGAAGAAGCT	900
CACAGACATT	TAGACGTTCC	AACTCTTTCC	CCACTAGTGG	ACCAAGTATA	TAATATGGTA	960
TCTTTTGGGC	ACTGGTATTA	CAACTGTTTT	TTAAACAAAA	GACTTTCCTT	GTGCTTTACT	1020
AAAAACCCAG	ACGGTGAATC	TTGAATACAA	TGCGTGCCAC	CCACGGCAGG	CATTCTATTG	1080
TGCATAGTTT	TGACTGACAG	GAGATGACAG	CATTTGGCTG	GCTGCGCTTG	CTGAGGACCC	1140
TCTCCTCCTG	TGTGGCGTCT	GAGACTGTGA	TGCAAATGCG	CCCGCCCTTT	TCTGGGAACT	1200
CAGAACGCCT	GAGTCAGGCG	GCGGTGGCTA	TTAAAGCGCC	TGGTCAGGCT	GGGCTGCCGC	1260
ACTGCAAGGA	TGAGGCTTCC	TGGTTGGTTG	TGGCTGAGTT	CTGCCGTCCT	CGCTGCCTGC	1320
CGAGCGGTGG	AGGAGCACAA	CCTGACTGAG	GGGCTGGAGG	ATGCCAGCGC	CCAGGCTGCC	1380
TGCCCCGCGA	GGCTGGAGGG	CAGCGGGAGG	TGCGAGGGGA	GCCAGTGCCC	CTTCCAGCTC	1440
ACCCTGCCCC	CGCTGACCAT	CCAGCTCCCG	CGGCAGCTTG	GCAGCATGGA	GGAGGTGCTC	1500
AAAGAAGTGC	GGACCCCTCA	GGAAGCAGTG	GACAGTCTGA	AGAAATCCTG	CCAGGACTGT	1560
AAGTTGCAGG	CTGACGACCA	TCGAGATCCC	GGCGGGAATG	GAGGGAATGG	AGCAGAGACA	1620
GCCGAGGACA	GTAGAGTCCA	GGAAGTGGAG	AGTCAGGTGA	ACAAGCTGTC	CTCAGAGCTG	1680
AAGAATGCAA	AGGACCAGAT	CCAGGGGCTG	CAGGGGCGCC	TGGAGACGCT	CCATCTGGTA	1740
AATATGAACA	ACATTGAGAA	CTACGTGGAC	AACAAGTGG	CAAATCTAAC	CGTTGTGGTC	1800
AACAGTTTGG	ATGGCAAGTG	TTCCAAGTGT	CCCAGCCAAG	AACACATGCA	GTCACAGCCG	1860
GGTAGGTGTA	ATGAGGGTCA	TACAGTTTGT	TCATGAAAGC	TGTATAGCCA	GATAGTGGCC	1920
ATAAACATTA	ACCCGAGGGA	GCATAAGTTA	GTCAGACTTT	CACCTGTTAA	GTTATGGCAG	1980
GAGAAACAAG	TGTTTTCTCA	AATGAGACAA	CAGAAATGGT	AAATGATCCA	CGTACAAAAA	2040
TCCTATTAGT	TGTACTCGTT	AGAGACCGTC	ACTTGCAAGT	CTCTAGACCT	TCCCTGCTAG	2100
GTCGACCAAC	AGACGAGCAG	AAACAGATTG	CTCCCGCAAT	CTGAACACAT	ATTTGAACAC	2160
AGGACAGGTA	TGGCAAGGTT	CCTGGCTCTG	CTTGCTTAGG	TCCCTGGGAA	TCAGATCTTG	2220
GGTGGCTGAT	GGGCTTTATA	AGGCTTTCAC	AAACAATCTG	CTGTGCTAGG	TTCTCAAATA	2280
TCTAGTGAGA	ATGGGAGATT	TTTATACATG	GAAGCATCTC	TCCTCTCTCT	CTCCTCTCTC	2340

CTCTCTCTTC TCTCTCTCTC TCTCTCTCTC TCTCTCTCTC TCTCTCTCTC TCTCTCTCTC 2400
CTCCCTCCCT CCCTCTCTCT CTCTTTGTGT GCGTGTGTGG TGGGGATGAG GACACGTGTA 2460
GAACTTCGGG GGTGAGACT TAGTGCAAT GCATCCTCAC CATTCCAGTT AGTGAATGTT 2520
AACACTATTT AAGGTCACAG ACCTAACAGC CTTCTGTGTC CGGATTCCTG GATTCCTAGG 2580
ACCTTTGTGG ATGGGTTGCC ACACCCCTCTG TGTTCATCCT GACTGTGAGG TCGATGGGAC 2640
ATAGTAGGGA TAACTTTCAT TTGGAATCTC TAGAGATGGT AGGTCATCAT GTCATAGAAT 2700
GTTATCACTA ATGACCAAGA TAGACACTCA TGTTTAAGAG ACATCACAAG GTGTATATTA 2760
AATATGACAT GGCATATAAC TTGTAATGAC AAAAAATAT TCTGTACCT ACTTTTCTCC 2820
TAAAAGCTTG GGAATCTCCA GAGTTCTAAA TACATGCAA CAGATTATTG TGTTTACAG 2880
GAATCTTATA TTGAACTTTC TTTACCTGAC TCAAATTTTA TTAAAATTAA CTGGGAACAA 2940
ATAGTTGGTC TCTAATCTCT AAAAAACCA CCAATGATT AACTGAGCA TAATTATAAT 3000
CACCTGCTG CTACGTCTAG AAACCAAAC GTGAAATATT GGCTGACTGT ATACCTTCCT 3060
AAATAATAAA TTCAGGATAA CATTGCCATA TTATTGGAGA ACCCCCCCT CCCTTTTAAA 3120
ACTGGAATCA TTTTATGTCA ATCTCAGGTG AAATACGAAT GGGTTTCAGA ACAGTGCTGT 3180
GCACTGAAGG CTGACATTTA GAACATATAT AACGATTTCT GTAAAGTCTG CTGTAACAAT 3240
TGCTGATTGT ATCCTAGGAG ACTTGACTC CTCTCAACGT TAAGGCAGAG GAATATAATG 3300
GTTATGAGAG TAAAACTCTC TGTCAGGTAC ATCTGGCTTT CTGTCCCAGC TCTGTCACTT 3360
AACACTTAGT TCGGGTGGGA AAACCCCTG ATCTTCCGGG AGACTAAGTA ACTGTATAAG 3420
CAAGCTGGCC GTGATATCCA CGTCGTAAG CTGCTGTGTG GGTTCAGTGA AAACGTGTTAC 3480
AGTGATTGGC AGAGTTTCTG GAGGTCATTG ACCCTCATTA AACCTTGCAT AACTTATTC 3540
TTACTACTCT TTGCTGTTAG TGTTGCCACC AGGATTGCCA TTCAAGGCAG TCCTGTATAC 3600
TTGATAACAC CAGTTGGTTC TGAGGCCTTA GTTAGCATCT GTTAGCCTGG TTCAGGAGAG 3660
TGTATCAGAG CCAGGTTCCCT CTATCACATA AACTGTAACG CAAGTGAATT GTCCAATTGC 3720
TGTGAGTCT GAGAGTCCTT GAGGTGCATA GCTTTGACTA ATAAATCCCC ATGCTTTTAT 3780
GCTTTTCCTT CCTCCCTCTT CCAGTTCAAC ATCTAATATA CAAAGATTGT TCCGACCACT 3840
ACGTGCTAGG AAGGAGAAGC AGTGGGGCCT ACAGAGTTAC CCCTGATCAC AGAAACAGCA 3900
GCTTTGAGGT CTAATGTGAC ATGGAGACCA TGGGTGGAGG CTGGACGGTG CTGCAGGCTC 3960
GCCTTGATGG CAGCACCAAC TTCACCAGAG AGTGGAAAGA CTACAAAGCC GGCTTTGGAA 4020
ACCTTGAACG AGAATTTTGG TTGGGCAACG ATAAATTTCA TCTTCTGACC AAGAGTAAGG 4080
AAATGATTTT GAGAATAGAT CTTGAAGACT TTAATGGTCT CAACTTTAT GCCTTGATG 4140
ATCAGTTTTA TGTGGCTAAT GAATTTCTCA AATACCGATT ACACATCGGT AACTACAATG 4200
GCACGGCAGG GGATGCCTTG CGTTTCAGTC GAACTACAA CCATGACCTG AGGTTTTTCA 4260
CAACCCGAGA CAGAGACAAC GATCGGTACC CCTCTGGGAA CTGTGGGCTC TATTACAGCT 4320

CAGGCTGGTG GTTTGATTCA TGTCTCTCTG CCAATTTAAA TGGCAAATAT TACCACCAGA 4380
 AATACAAAGG TGTCCGTAAT GGGATTTTCT GGGGCACCTG GCCTGGTATA AACCAGGCAC 4440
 AGCCAGGTGG CTACAAGTCC TCCTTCAAAC AGGCCAAGAT GATGATTAGG CCCAAGAATT 4500
 TCAAGCCATA AATTGCTAGT GTTCATCTCT CTGGGCACTC ACTATCTAAG AGGACGATGA 4560
 ATTCCTTCAG CCCTTTACCA TATGTCCTCAG TTTATATTCC TTCCTATGG CTAAACATTT 4620
 CCTTTAAAGC TTTACAGCTT TTAGAATAAA GCTGAAAAGA TCTAAAAAGA CTCCTATGTT 4680
 GCTGTTATAT GAGGAATGCT TGAAAGCACT GGAAATATTG ACAATTATAC ATTATAATTG 4740
 CAAAACCTTT CATTTTTATT AGTTGAAAAG TTTCTAATA TTTTATTAT TTTTATAATA 4800
 AAAACTAAAT TATTCAGCAA GCTAGATTCT ATATACGCAA GTTTTATTTT CACTAGGGCT 4860
 AAATATACAC ATTTGAGAAT ATACCAGTCC TTCCAGGTAC AACTGAAAGC CAAGAACGTG 4920
 AGTATTATCT TTCGTCTAAG AAGAACTTAA AGCATTTTAG TTCTCAAGAA GAAGGGCAGG 4980
 GATGGGATTG GGGGCCAGGG ACAATATGTA TAGCTAAATG TATTCATCTA ATGCAAAATA 5040
 TGGCATTAAA ATACCTAAAA ATGTGGTAGC ATAATATATG TCTCTTCCCT CTCCAATTGA 5100
 AAAATAATGT TACCCTGTAG ACTTTGGTTT AGTGGTAATT CACTTACTGT TTATAGCCTG 5160
 TTAGACCGCG ATACAAAAGC TGCTTTATCC TCTCCCTCTG CTCTCTGTGC ACAATGGTTT 5220
 GTGATGTAAG GTGCTAGACT ACTGTAAGGT TTCCTTGGGG AAAGGCATGG TAAGGGAAAA 5280
 CACACTGGTT TATATTTTGA AAGCCAATCC TAATCCCAA GCAATACTGT TGTCGAGGAG 5340
 TCAACGTTCT AGGAAGCTGA CTTTCTAGA ACAAATGTAT TTATTAGGAT GAATTTGGGA 5400
 ATT 5403

(2) INFORMATION FOR SEQ ID NO:4:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 432 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

Met	Arg	Leu	Pro	Gly	Trp	Leu	Trp	Leu	Ser	Ser	Ala	Val	Leu	Ala	Ala
1				5					10					15	
Cys	Arg	Ala	Val	Glu	Glu	His	Asn	Leu	Thr	Glu	Gly	Leu	Glu	Asp	Ala
			20					25					30		
Ser	Ala	Gln	Ala	Ala	Cys	Pro	Ala	Arg	Leu	Glu	Gly	Ser	Gly	Arg	Cys
			35				40					45			
Glu	Gly	Ser	Gln	Cys	Pro	Phe	Gln	Leu	Thr	Leu	Pro	Thr	Leu	Thr	Ile
	50					55				60					
Gln	Leu	Pro	Arg	Gln	Leu	Gly	Ser	Met	Glu	Glu	Val	Leu	Lys	Glu	Val
65					70					75				80	

Arg Thr Leu Lys Glu Ala Val Asp Ser Leu Lys Lys Ser Cys Gln Asp
85 90 95

Cys Lys Leu Gln Ala Asp Asp His Arg Asp Pro Gly Gly Asn Gly Gly
100 105 110

Asn Gly Ala Glu Thr Ala Glu Asp Ser Arg Val Gln Glu Leu Glu Ser
115 120 125

Gln Val Asn Lys Leu Ser Ser Glu Leu Lys Asn Ala Lys Asp Gln Ile
130 135 140

Gln Gly Leu Gln Gly Arg Leu Glu Thr Leu His Leu Val Asn Met Asn
145 150 155 160

Asn Ile Glu Asn Tyr Val Asp Asn Lys Val Ala Asn Leu Thr Val Val
165 170 175

Val Asn Ser Leu Asp Gly Lys Cys Ser Lys Cys Pro Ser Gln Glu His
180 185 190

Met Gln Ser Gln Pro Val Gln His Leu Ile Tyr Lys Asp Cys Ser Asp
195 200 205

His Tyr Val Leu Gly Arg Arg Ser Ser Gly Ala Tyr Arg Val Thr Pro
210 215 220

Asp His Arg Asn Ser Ser Phe Glu Val Tyr Cys Asp Met Glu Thr Met
225 230 235 240

Gly Gly Gly Trp Thr Val Leu Gln Ala Arg Leu Asp Gly Ser Thr Asn
245 250 255

Phe Thr Arg Glu Trp Lys Asp Tyr Lys Ala Gly Phe Gly Asn Leu Glu
260 265 270

Arg Glu Phe Trp Leu Gly Asn Asp Lys Ile His Leu Leu Thr Lys Ser
275 280 285

Lys Glu Met Ile Leu Arg Ile Asp Leu Glu Asp Phe Asn Gly Leu Thr
290 295 300

Leu Tyr Ala Leu Tyr Asp Gln Phe Tyr Val Ala Asn Glu Phe Leu Lys
305 310 315 320

Tyr Arg Leu His Ile Gly Asn Tyr Asn Gly Thr Ala Gly Asp Ala Leu
325 330 335

Arg Phe Ser Arg His Tyr Asn His Asp Leu Arg Phe Phe Thr Thr Pro
340 345 350

Asp Arg Asp Asn Asp Arg Tyr Pro Ser Gly Asn Cys Gly Leu Tyr Tyr
355 360 365

Ser Ser Gly Trp Trp Phe Asp Ser Cys Leu Ser Ala Asn Leu Asn Gly
370 375 380

Lys Tyr Tyr His Gln Lys Tyr Lys Gly Val Arg Asn Gly Ile Phe Trp
385 390 395 400

Gly Thr Trp Pro Gly Ile Asn Gln Ala Gln Pro Gly Gly Tyr Lys Ser
405 410 415

Ser Phe Lys Gln Ala Lys Met Met Ile Arg Pro Lys Asn Phe Lys Pro
420 425 430